W. L. CONWELL.

CAR FLOOR.

APPLICATION FILED OCT. 3, 1914.

1,191,283.

Patented July 18, 1916.

3 SHEETS—SHEET 1.

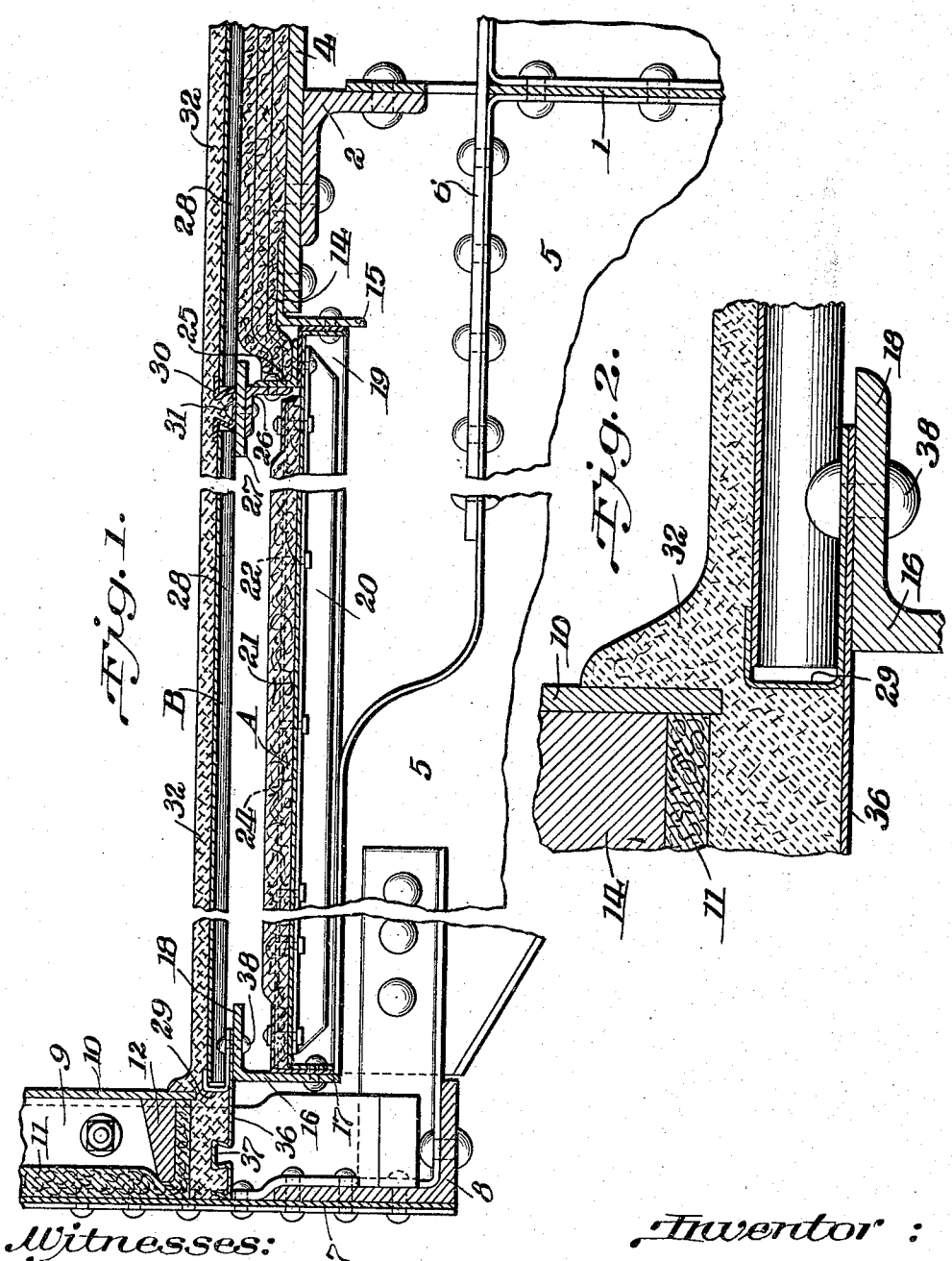


Fig. 1.

Fig. 2.

Witnesses:

M. B. Nichols

Frances M. McCann

Inventor:

Walter L. Conwell.

by George W. Ramsey.

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

W. L. CONWELL.

CAR FLOOR.

APPLICATION FILED OCT. 3, 1914.

1,191,283.

Patented July 18, 1916.

3 SHEETS—SHEET 2.

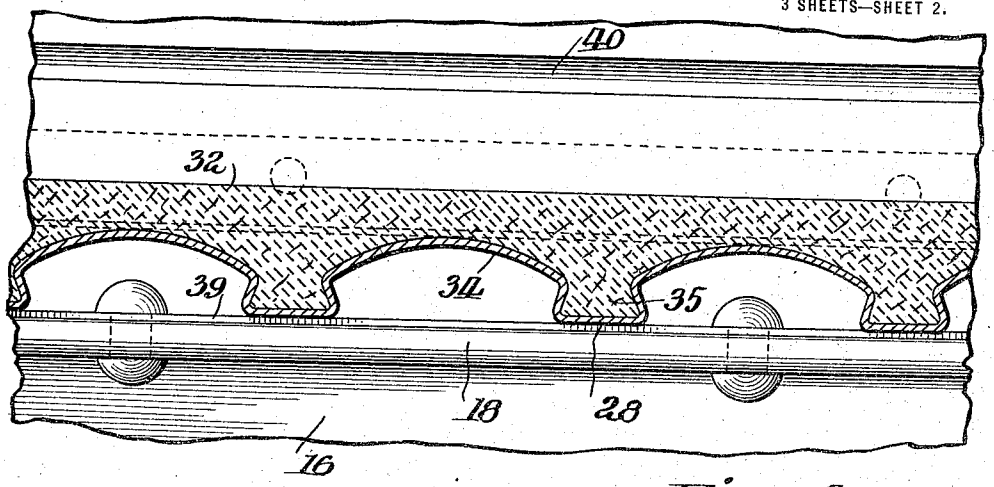


Fig. 4.

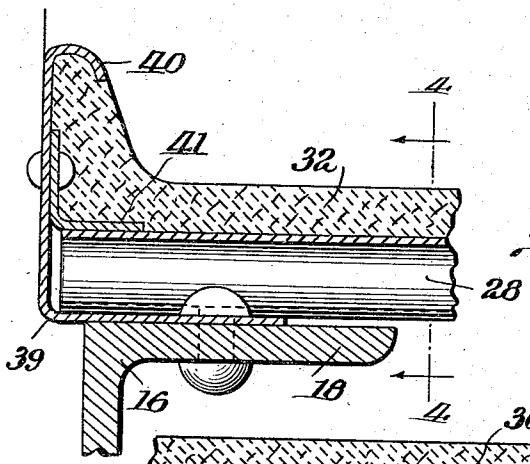


Fig. 3.

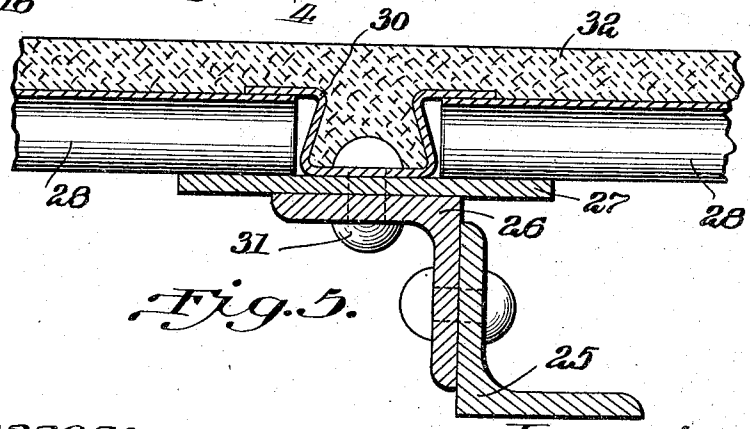


Fig. 5.

Witnesses:

M. B. Nichols

Frances M. McCann

Inventor:

Walter L. Conwell

by George W. Ramsey.

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

W. L. CONWELL.

CAR FLOOR.

APPLICATION FILED OCT. 3, 1914.

1,191,283. Patented July 18, 1916.

3 SHEETS—SHEET 3.

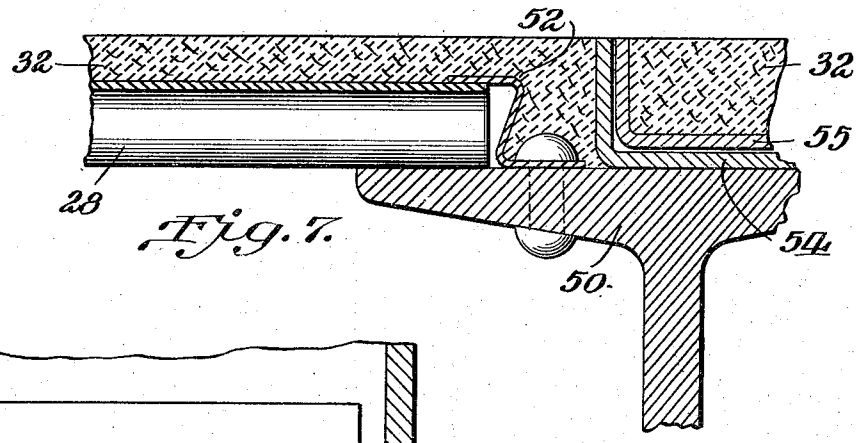


Fig. 7.

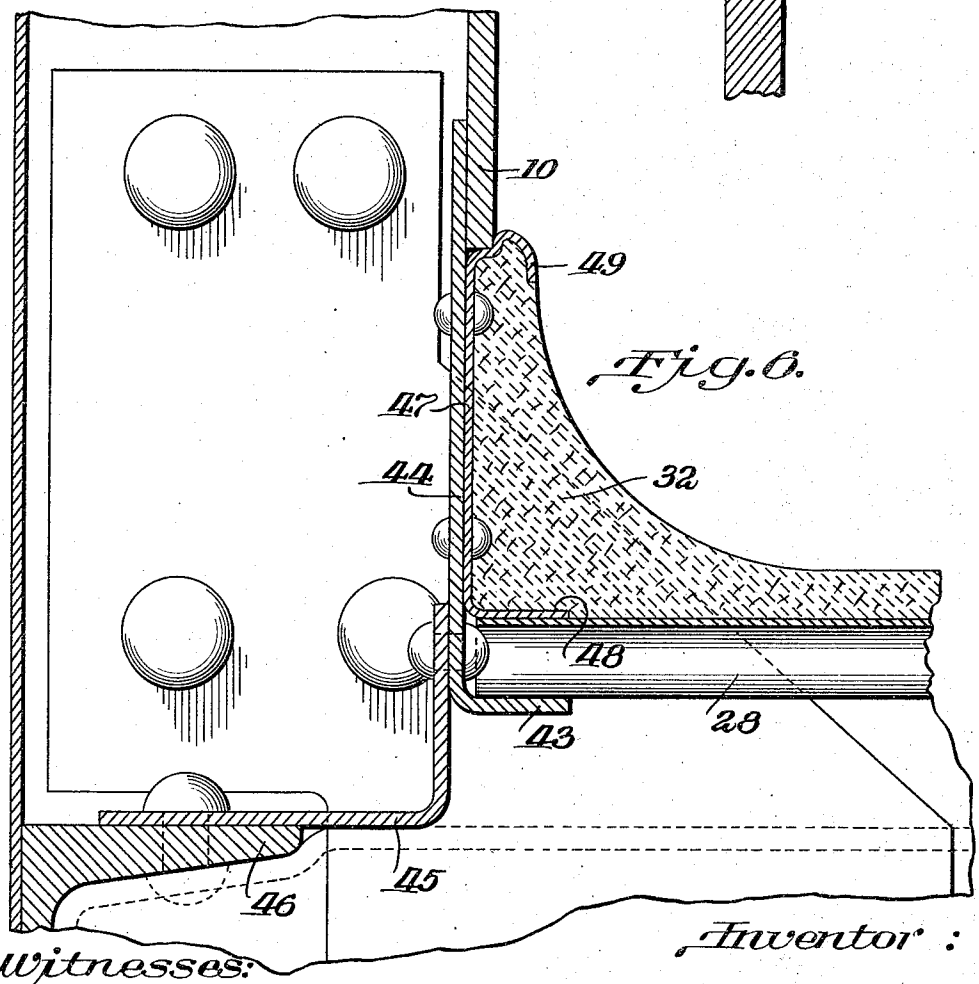


Fig. 6.

Witnesses:
M. B. Nichols
Frances M. McCann.

Inventor:
by Walter L. Conwell
George W. Ramsey
Attf.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALTER L. CONWELL, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO TRANSPORTATION UTILITIES COMPANY, OF NEW YORK, N. Y., A CORPORATION OF WEST VIRGINIA.

CAR-FLOOR.

1,191,283. Specification of Letters Patent. Patented July 18, 1916.

Application filed October 3, 1914. Serial No. 864,844.

To all whom it may concern:

Be it known that I, WALTER L. CONWELL, a citizen of the United States, and a resident of the city of Montclair, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Car-Floors, of which the following is a specification.

This invention relates broadly to railway car structures and more particularly to railway car floors.

The principal object of this invention is to provide a construction for securely maintaining a car floor structure in position and effectively interlocking the wear surface with the supporting sub-floor.

A further object of this invention is to provide a car floor structure including a metallic sub-floor constructed and arranged to interlock with the wear surface both lengthwise and transverse of the car floor.

A still further object of this invention is to provide a car floor including a metallic sub-floor constructed to be self-sustaining and to interlock with the wear surface by interlocking members arranged transverse the car, and supported interlocking members extending lengthwise of the car to afford a longitudinal interlock with the wear surface.

This invention also includes provisions for supporting and maintaining a car subfloor upon the car underframe.

While this invention relates more particularly to passenger cars, it may be also used in connection with other types of cars, such as baggage cars, refrigerator cars, etc.

Still other and further objects of this invention will in part be obvious and will in part be pointed out in the specification hereinafter following by reference to the accompanying drawings in which like characters are used to represent like parts throughout the several figures thereof.

Figure 1 is a detail elevational view showing a transverse section through a portion of the car floor, constructed in accordance with this invention. Fig. 2 is an enlarged detail view of the device for retaining the metallic supporting sheet from buckling. Fig. 3 is a detail view of a slight modification of the devices for maintaining the metallic supporting plate in position. Fig. 4 is a sectional view taken on line 4—4 of Fig. 3 looking in the direction of the arrow. Fig. 5 is an enlarged detail view showing one of the longitudinal interlocking members illustrated in Fig. 1. Fig. 6 illustrates in detail another slight modification of the construction of the floor at the side of the car. Fig. 7 is an enlarged detail view illustrating the construction of the floor to provide for a trap door opening.

Referring now to the drawings, and more particularly to Fig. 1, the center sill 1, which may be of any well known construction, is illustrated as being provided with a top chord 2 carrying a cover plate 4. The cross bearer diaphragm 5 is illustrated as being riveted to one member of the center sill and is tied to a similar diaphragm (not shown) on the opposite side of the center sill by means of the tension member 6. The cross bearer diaphragm is connected with the side plate girder, including the plate 7 and the bottom chord or angle 8, which carries the side posts 9. The construction thus far described is of the usual conventional form.

The usual side posts 9 are riveted to the plate girder 7 and may also be secured to the cross bearer diaphragm 5, as is well known in the art. These side posts 9 are spaced apart and may be covered by interior finish material such as agasote, or other suitable composition board 10. The space between the side posts 9 is preferably lined with heat insulating material, such as hair felt, lima felt, or flax felt, or other material as at 11, which may be retained in position by means of the wooden fillers 12.

The cover plate 4 is shown as carrying at the edge thereof an angle 14, of which one element comprises a depending flange 15. A similar angle 16 is carried by the side posts 9 and is shown as resting on the upper part of the outer end of the diaphragm 5. The angle 16 is arranged so that one part thereof comprises a shelf 18. In order to provide a suitable protection for temperature changes, noise, etc., a false floor A is arranged beneath the true or upper flooring B. The false floor A is shown as including a metal supporting plate 19 having downwardly turned flanges, which are riveted at one side to the depending flange 15 of the angle 14, and at its other side is riveted to the vertical part 17 of the angle 16 that is carried upon the side posts 9. This supporting plate 19 is preferably stiffened by means of rolled angles 20 which extend transversely beneath the supporting plate

19 and are bolted through the heat insulation 21 that is carried upon the supporting plate 19. The bolts 22 which hold the rolled angles 20 in place, preferably pass through transverse bars 24 which rest on top of the insulation and operate to distribute the effective holding forces of the bolts 22 over a wider area of the heat insulating material than would be effected by the bolt heads alone.

A channel iron 25 is riveted on the supporting plate 19, and extends parallel with the center sill and is provided with an upstanding leg or portion. A similar angle iron 26 is riveted to the upstanding part of the channel iron 25 and constitutes a shelf upon which is carried the supporting plate 27. The sub-floor 28 for the upper or true flooring B is preferably formed from sheets or sections of corrugated iron of the type known as "chanarch." Preferably the floor is laid in three longitudinal units, namely, one covering the center sills, and a section extending from the sides of the car to the center portion. The side portions are preferably constructed with the sub-floor 28 supported at one end of the supporting plate 27 and at the other end are supported upon the shelf 18 and the angle 17. In order to maintain the chanarch sub-floor in proper position a pressing 29 is constructed in such manner as to bear upon the upper parts or corrugations of the chanarch. It forms an immediate support for the edge of the chanarch structure and is riveted in place by rivets passing through the shelf 18. The inner edge of the chanarch is maintained in position by means of the keystone-shaped anchor 30 that is riveted upon the supporting plate 27 by means of rivets 31 passing through the keystone anchor, the supporting plate, and the shelf of the angle 26. A wear surfacing material, such as flexolith 32, is placed upon the sub-floor proper in a plastic state and completely fills all the crevices and undulations in the sub-floor thereby being substantially locked in position when the composition wear surface hardens, as will be hereinafter more fully explained.

It will be noted by referring to Fig. 4, that the chanarch sub-floor comprises a continuing series of arches 34 connected by keystone valleys 35, and that the keystone-shaped valleys when filled with flexolith 32, substantially interlock the flexolith wear surface with the chanarch sub-floor. It will also be noted that the keystone-shaped anchor 30 which is arranged at right angles to the corrugations in the chanarch sub-floor, not only holds the sub-floor in place, but also provides a keystone shaped valley in which the composition wear surface is interlocked in a longitudinal direction. Thus it will be seen that the composition wear surface is interlocked with the metallic sub-floor in both transverse and longitudinal directions. In order to provide an interlock for the outer edge of the composition wear surface a pressing 36 (Fig. 1) is provided, which includes a keystone-shaped ridge 37. The pressing 36 may constitute a continuous sub-plate notched to receive the side posts 9, or it may be formed by a plurality of individual plates inserted between the side posts, and in either case it is preferably held in position by the rivets 38 which connect the pressing 29 to the shelf 18.

By referring to Fig. 1 it will be noted that the keystone-shaped ridge 37 effectively interlocks the edges of the flexolith wear surface so that the entire wear surface is securely held in position upon the sub-floor. The middle section of the metallic sub-floor 28 is supported at each edge upon supporting plates 27 and is retained in position by means of the keystone anchors 30. The space intermediate the cover plate 4 of the center sill and the chanarch sub-floor 28 of the middle section is preferably filled with heat insulating material of the character hereinbefore specified. It will be noted that the true floor B of the car is supported above the false floor A in such manner that the heavier vibrations are absorbed by the false floor, and the floor A is so constructed as to allow sufficient elasticity between the several parts to prevent unpleasant vibrations and to cushion the more severe shocks to which the underframe is subjected when the car is in use.

Fig. 3 illustrates a slight modification of the treatment of the floor at the outer edge where the floor joins the side of the car. In this construction it is to be noted that a pressing 39 is provided with a slight overturned lip 40 which is adapted to form the upper finished edge of the floor, thereby to protect and at the same time support the outer edge of the composition flexible flooring, thus preventing fracture at the edges of the surface. A small angle 41 is adapted to be riveted to and carried by the pressing 40 to retain the chanarch sub-floor 28 in proper position and prevent buckling. As in the construction shown in Fig. 1, the pressing 39 is adapted to be riveted to the shelf 18 of the angle 17.

Fig. 6 illustrates a further modification of the treatment of the outer edge of the floor structure wherein the chanarch sub-floor 28 is supported upon the shelf 43 that is rolled upon the plate 44 which is in turn carried by the side posts or by the side plate girder. In order to complete and sustain the plate 44 in position, an angle plate 45 is supported upon and riveted to the chord 46 of the side girder. This angle plate 45 is riveted to the plate 44 near the lower edge thereof, thereby sealing the space

between the side posts and sustaining the lower edge of the plate 44. In order to prevent fracture of the side of the flexolith wear surface and to retain the chanarch sub-floor in proper relation, the pressing 47 is provided with an angle 48 which rests upon the upper surface of the chanarch sub-floor and which is provided at its upper edge with a notched inturned lip 49. The notch in the inturned lip is provided to accommodate the interior facing or agasote board 10. The pressing 47 is riveted to and carried by the plate 44.

Fig. 7 illustrates a treatment of the chanarch sub-floor around a trap door wherein the chanarch sub-floor 28 rests upon the supporting beam or member 50 to which is riveted the anchor Z plate 52 which extends over and holds down the edge of the chanarch 28. A pressed metal member 54 provides a facing for the door pan 55 which is filled with flexolith to a surface substantially even with the car floor surface.

In the foregoing description it will be noted that especial and particular provisions have been made to prevent fracture of the wear surface at the edge thereof and to insure that the wear surface is properly and securely interlocked with the sub-floor.

Having thus described my invention, what I desire to claim is:—

1. A railway car structure including in combination, a car frame, a support mounted upon the car frame, a pressing secured to said support and provided with a lip portion, a corrugated sub-floor beneath said lip portion, and a wear surface upon said corrugated sub-floor.

2. A railway car structure including in combination, framing, supports carried by said framing, a corrugated sub-floor resting upon said supports, devices riveted to said supports and lapping the end of said corrugated sub-floor, said devices being provided with a lip extending over the edge of said corrugated sub-floor to hold the same in position upon said supports, and a wear surface covering said sub-floor.

3. A railway car structure including in combination, a center sill, side members, a supporting device carried by said side members, supporting members intermediate the side members and coöperating with said center sill, a metallic sub-floor carried by said supporting members, said metallic sub-floor including a metallic sheet having corrugations extending transversely of the car and having valleys with the lower portions wider than the upper portions, devices extending longitudinally of said car and adapted to retain said metallic sub-floor in position upon the said supporting means, said devices including members having valleys with overhanging upper portions, and a composition wear surface entirely covering the sub-floor and interlocking with the said valleys to securely maintain the wear surface in position upon the sub-floor.

4. A railway car structure including in combination, framing, floor supports carried by said framing, a floor supported by said floor supports, said floor comprising a plurality of longitudinally extending corrugated sheets, means intermediate said corrugated sheets to retain said sheets in position on said supports, said means having a truncated triangular cross section, a device lapping the outer edge of the corrugated sheet adjacent the sides of the car and extending over the edge of the sheet, a composition wear surface interlocked with said sheets and said means, and a pressing adjacent the edge of said wear surface at the side of the car and adapted to interlock with said wear surface to prevent fracture of the same.

5. A railway car structure including in combination, a center sill, side members, a false floor extending between said center sill and said side members, a true floor above said false floor and over said center sill, said true floor including a sub-floor comprising longitudinal sections of corrugated sheet metal having the corrugations thereof extending transverse of said car with the valleys of the corrugations arranged to comprise interlocking means, securing devices intermediate each section of the said metallic sub-floor, said securing devices including members having valleys constituting interlocking means extending longitudinally of said car, and a wear surface entirely covering said sub-floor and filling all of said valleys to securely interlock said wear surface with said sub-floor.

6. A railway car structure including in combination, a metallic sub-floor, said metallic sub-floor being provided with valleys, said valleys having overhanging upper portions to provide restricted throats for interlocking purposes, certain of said valleys being arranged transversely of the car and certain other of said valleys being arranged longitudinally of the car and on each side of the center thereof, and a composition wear surface entirely covering said floor and in interlocking engagement with the said valleys.

7. A railway car structure including in combination, car framing, supports carried by said car framing, corrugated sub-floor sections resting on said supports, said corrugated sub-floor sections including valleys of substantially keystone cross section extending transversely across the car, and devices of substantially keystone cross section extending longitudinally of the car and across the ends of the valleys, and a composition wear surface interlocked with said sub-floor and said devices.

8. A railway car structure including in combination, framing, floor supports carried by said framing, a floor comprising a metallic sub-floor, said metallic sub-floor being arranged with interlocking members having truncated triangular cross sections, certain of said interlocking members extending transversely of said car and certain of said interlocking members extending longitudinally of said car adjacent the center thereof, a composition wear surface covering said sub-floor and interlocking with said interlocking members, and longitudinally extending pressings provided with lips to protect and secure the edges of the said wear surface.

9. A railway car including in combination, a sub-floor comprising sheets having keystone shaped valleys and arch shaped ribs, supports extending longitudinally of the said car, said supports lapping the edges of said metallic sub-floor, a unitary composition wear floor over said sub-floor, interlocking means near the center of the car to interlock the composition floor to the sub-floor, and means for securing the side edges of said composition flooring to said sub-floor to prevent fracture of said flooring adjacent the edges thereon.

10. A railway car structure including in combination, a center sill, side members, a false flooring extending between said side members and said center sill, a true flooring above said false flooring, said true flooring including a metallic sub-floor, a composition wear surface overlying said metallic sub-floor, said metallic sub-floor and said composition flooring being constructed to interlock, and means adjacent the side of said car to interlock the edges of said composition flooring with said sub-floor.

11. A railway car structure including in combination, a center sill, side members, a sub-floor extending between said center sill and said side members, heat insulation covering the upper part of said center sill and said false floor, a true floor above said heat insulation, said true floor including a metallic sub-floor, means lapping the edges of said metallic sub-floor to retain the sub-floor in predetermined position, a wear surface covering said sub-floor, and means to interlock said sub-floor and said wear surface.

12. In a car construction in combination, car framing, supports carried by said car framing, a floor mounted upon said supports, said floor comprising a sub-floor of corrugated metal sheets, said corrugated metal sheets being arranged in sections longitudinally of said car, means extending longitudinally of the car and separating said sections and lapping the ends of the corrugated sheets, a wear surface interlocking with said means and said corrugated sheets, and devices adjacent the edges of said wear surface to securely lock said edges in predetermined position to prevent fracture of said edges, said parts being constructed and arranged to interlock said sub-floor and said wear surface to prevent separation due to torsional stresses.

13. A railway car structure including in combination, car framing supports mounted upon said framing, a metallic corrugated sub-floor carried by said supports, the corrugations of said sub-floor extending transversely of the car and including valleys having a truncated triangular cross section, members extending longitudinally of said car and at right angles to said valleys, said members being provided with lips overlapping the ends of adjacent sub-floor sheets and constructed to form a device with a valley having a cross section comprising a truncated triangle, and means extending longitudinally of said car adjacent the edges thereof to interlock said edges with the sub-floor.

WALTER L. CONWELL.

Witnesses:
G. H. ORD,
W. J. ELLIOTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."